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Inguinal Canal and Hernia Examination

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Definition

The anatomic arrangement of muscular and fascial layers in the lower abdomen makes this area a site of potential weakness with possible development of inguinal hernias. Passage through this region by the vas deferens and spermatic vessels in the male and by the round ligament in the female makes the area more vulnerable to hernia protrusions. Inguinal or groin hernias may be congenital, exiting along the spermatic cord or round ligament as "indirect hernias," or may occur due to weakness of the transversalis fascia, producing "direct hernias." Defects medial to the femoral vein as it passes beneath the inguinal ligament allow for the development of femoral hernias. Approximately 80% of all inguinal hernias occur in males, whereas 85% of all femoral hernias occur in females.

Technique

A history of pain, swelling, or presence of a mass in the groin area is significant. Specific questions need to be asked: How long have you noticed the discomfort (swelling, mass, pain)? Does standing or activity such as lifting intensify or evoke the pain? Does coughing or sneezing make the lump more prominent? Will lying down relieve the symptoms or allow the swelling to disappear? Can you push the mass back in with your hand? Have you ever had difficulty pushing the mass back into the abdomen? Have you ever had a hernia or operation on the other side? In children, specifically in infants, the parents' observation of a swelling or protrusion may be the only positive feature of the evaluation.

Examination of the inguinal region in both men and women is best performed with the patient standing and the physician seated on a stool facing the patient. Observation of the groin area in oblique light with the patient relaxed and then actively coughing may reveal a bulge or an abnormal motion. Scrotal masses may also be noted by inspection and palpation. Carefully observe whether any bulge noted is above (inguinal hernia) or below (femoral hernia) the inguinal ligament crease. The examiner should then stand to the side of the patient with the fingers lightly applied to the groin as shown in Figure 96.1, the left hand on the patient's left side and the right hand on the patient's right side. With the fingers placed over the femoral region, the external inguinal ring, and the internal ring, have the patient cough. A palpable bulge or impulse located in any one of these areas may indicate a hernia. The examiner should then return to the sitting position. In the male, the scrotum on each side is inverted with the examining index finger entering the inguinal canal along the course of the cord structures. The size of the external ring can be ascertained by palpating just lateral to the pubic tubercle. Again with the patient coughing, hernia bulges can be felt either against the side of the examining finger (direct hernia) or

at the tip of the finger as it approaches the internal ring (indirect hernia). Large, indirect hernias may extend all the way into the scrotum, giving the gross appearance of a hydrocele. Transillumination of the scrotal contents in a darkened room will aid in differentiating a hydrocele from an intrascrotal indirect inguinal hernia.

Any mass found on groin examination should be gently pressed with the examining fingers in an attempt to reduce the hernia and thereby cause the contents of the sac to return to the peritoneal cavity. Incarcerated hernias may be reduced more easily with the patient recumbent on the examining table. Mild sedation may be necessary to provide sufficient muscle relaxation to allow for reduction. Any hernia mass that is tender to palpation or associated with symptoms of nausea and vomiting should be considered possibly strangulated (compromised vascularity of entrapped bowel), and no attempt should be made to reduce it manually. This condition represents an acute surgical emergency.

Basic Science

Indirect inguinal hernias are due to a persistence of the processus vaginalis through the internal ring for a varying distance along the course of the spermatic cord or round ligament. This protrusion of peritoneum constitutes the so-called hernia sac. The hernia does not become detectable, however, until intra-abdominal fat, fluid, or a viscus enters the sac. The processus vaginalis is always located anterior and medial to the structures of the spermatic cord or round ligament. With time, pressure applied by the intra-abdom-

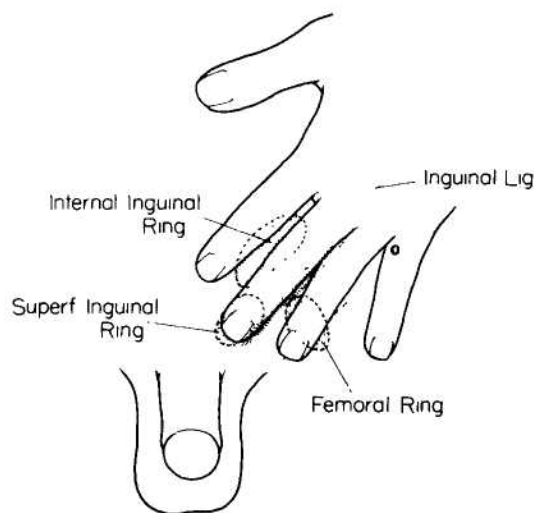


Figure 96.1
Placement of the hand when examining for a hernia.

inal contents in the sac causes enlargement of the sac and dilation of the internal inguinal ring. After prolonged enlargement, the transversalis fascia, which is the primary support of the posterior wall of the inguinal canal, becomes attenuated.

A direct inguinal hernia develops medial to the internal inguinal ring. The posterior wall weakens as the transversalis fascia thins, and a bulge results. These hernias usually contain properitoneal fat and bladder wall, and are rarely found to extend into the scrotum. Femoral hernias, which exit from the retroperitoneal space along the femoral vessels in the femoral canal, can on occasion be confused with inguinal canal hernias.

Clinical Significance

Indirect inguinal hernias not only may cause discomfort and pain but also may lead to severe problems requiring urgent or emergency surgery to prevent or correct life-threatening complications. An incarcerated hernia represents entrapped viscera (usually small bowel or omentum) that cannot be easily reduced into the peritoneal cavity through the internal inguinal ring by gentle pressure on the hernia mass. Although the vascularity of the incarcerated bowel may not be compromised, the patient develops intestinal obstruction.

This requires early surgical release of the entrapped bowel and repair of the hernia defect. Prolonged entrapment of bowel in the hernia sac by a tight internal ring leads to edema of the bowel, subsequent venous occlusion, arterial congestion, and finally gangrenous changes in the involved bowel wall and mesentery. Such strangulated hernias result not only in intestinal obstruction but also in bowel perforation, peritonitis, septicemia, and vascular collapse. Rapid resuscitation and surgical intervention with resection of the compromised segment of bowel are required to prevent ensuing complications that may lead to a fatal outcome. Elective surgical repair of hernias found on physical examination prevents problems that may develop with incarcerated or strangulated viscera. Emergency surgical correction is mandatory when an incarcerated or strangulated inguinal hernia develops.

References

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